

AIRPORT AND CITY TEMPERATURES AT DETROIT, MICH.

By CLARENCE J. ROOT

[Weather Bureau Office, Detroit, Mich., November 1938]

At a number of places telegraphic observations and the official city records have been moved from the downtown office to the airport station. The first move of this kind was made at Detroit. Observations are being continued at the City Office in downtown Detroit to supplement those made at the airport.

The instrument shelter at the City Office is on the roof of the Federal building, a 10-story structure located in the business section. Detroit City Airport, on the other hand, is 5 miles northeast of the Federal building; it is surrounded by residential sections, with some industrial and commercial properties. In general, the residential areas, largely built-up, extend for some miles beyond. The instrument shelter has a ground exposure and is located at the south edge of the airport property adjacent to a cemetery.

There are now available for comparison 5 years of record for the months of June to September, inclusive, and 4 years for the other months. In the averages discussed in this study the airport is considered as a base and the City Office values as plus or minus.

The maximum temperature averages lower at the City Office for all months except June; the departures range

from -1.0° in October to 0.0° in June. December and January are more than -0.7° and March, May, and July less than -0.3° .

Minimum averages are higher at the City Office, the differences vary from $+0.5^{\circ}$ in November to $+2.8^{\circ}$ in July. Every month from May to October, inclusive, shows a difference of more than 2° .

The average mean temperatures show departures which range from -0.1° in November to $+1.3^{\circ}$ in July.

Taking an average of the absolute highest by individual months, the values differ by -2° for 5 months, -1° for 2 months, and 0° for 2 months. Similarly, the values for the absolute lowest vary from 0° to $+4^{\circ}$.

By seasons, summer shows the smallest difference for the mean maximum (-0.2°) but the greatest for the mean minimum ($+2.6^{\circ}$). The mean maximum has the greatest difference in autumn (-0.8°), and the mean minimum the least in winter ($+1.3^{\circ}$).

Data for the 52 months indicate that on the average the maximum at the downtown office is 0.5° lower than at the airport, the minimum 1.8° higher, and the mean 0.6° higher.

Table showing difference in temperature between airport and city office, Detroit, Mich.

[Airport considered as base; city office plus or minus]

Data	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average maximum.....	-0.8	-0.3	-0.1	-0.6	-0.2	0.0	-0.2	-0.3	-0.7	-1.0	-0.7	-0.8	-0.5
Average minimum.....	+1.1	+1.5	+1.1	+1.2	+2.1	+2.5	+2.8	+2.6	+2.7	+2.2	+0.5	+1.4	+1.8
Average mean.....	+0.2	+0.6	+0.5	+0.3	+1.0	+1.2	+1.3	+1.2	+1.0	+0.6	-0.1	+0.3	+0.6
Average absolute highest.....	-2	-2	-1	0	0	0	-1	0	-2	-2	-2	0	-1
Average absolute lowest.....	+4	+2	+2	0	+2	+3	+3	+3	+3	+3	0	+1	+2
Greatest difference of any month—absolute highest.....	-4	-2	-3	{ +1 -1 }	+1	-2	-2	-1	-3	-5	-3	+3	-5
Greatest difference of any month—absolute lowest.....	+8	+6	+10	+2	+4	+5	+5	+6	+4	+4	+2	+2	+10

PREVIOUS ARTICLES IN THE MONTHLY WEATHER REVIEW ON THERMOMETER EXPOSURE

- (1) Abbe, Cleveland: Thermometer Exposure. 25: 306-7, July 1897.
- (2) Henry, A. J.: Comparative Thermometer Readings at New York. 28: 99-100, March 1900.
- (3) Hammon, W. H., Duencel, F. W.: Abstract of a Comparison of the Minimum Temperatures Recorded at the United States Weather Bureau and the Forest Park Meteorological observatories, St. Louis, Mo. for the year 1901. 30: 12-13, January 1902.
- (4) Smith, J. W.: The climate of the City and the Country Compared. 40: 30-31, January 1912.
- (5) Coberly, E. D.: City and Suburban Temperatures. 40: 573-4, April 1912.

- (6) Köppen, V.: A Uniform Thermometer Exposure at Meteorological Stations for Determining Air Temperature and Atmospheric Humidity. 43: 389-395, August 1915.
- (7) Redway, J. W.: Urban versus Suburban Temperatures. 47: 28-29, January 1919.
- (8) Young, F. D.: Influence of Exposure on Temperature Observations. 48: 709-711, December 1920.
- (9) Alciatore, H. F.: Effect of Change of Position of the Thermometer Shelter at Escondido, Calif., upon the Minimum Temperature. 49: 339-340, June 1921.
- (10) Laskowski, B. R.: Comparison of Roof and Ground Exposure of Thermometers. 59: 77-79, February 1931.
- (11) Laskowski, B. R.: Ground Temperatures Compared to Roof Temperatures. 64: 17, January 1936.
- (12) Robb, A. D.: Comparison of Temperatures from Roof and Ground Exposures at Topeka, Kans., 1935-36. 65: 388-392, November 1937.